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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,290	06/25/2003	Achilles G. Kogiantis	Kogiantis 14-4-7-5	9899

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EXAMINER	
DAO, MINH D	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,290	KOGIANTIS ET AL.	
	Examiner	Art Unit	
	MINH D. DAO	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-13 and 15-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-13 and 15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 07/19/06 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al. (US 2003/0123396) in view of Chizhik et al. (US 6,999,724).

Regarding claim 1, Seo teaches a method of transmitting information in a communication system having at least one multiple antenna system (see fig. 2, section [0024]), the method comprising the step of:

transmitting over N defined time periods long term information arranged in a particular format (see fig. 4; sections [0040,0069-0071,0090]. The TFRC of Seo reads on the N defined time periods, and the C/I measurement of Seo reads on the long term

information of the present invention) and obtained from at least a portion of measured and/or calculated received information where N is an integer equal to 1 or greater (see fig. 4; sections [0040,0069-0071,0090]. The measurement of C/I of Seo reads on the measured and/or calculated received information of the present invention). However, Seo fails to teach that long term information comprising a correlation value between at least two antennas that is a function of a signal vector received on the at least two antennas. Chizhik, in an analogous art, teaches a relationship between least two antennas that is a function of a signal vector received on the at least two antennas in an antenna beam forming system to compensate the received signals due to the Doppler Effect (see col. 8, line 5 to col. 9, line 64). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the teaching of Chizhik to Seo in order for the combined system to obtain the Doppler shifts therefore to enhance the received signals.

Regarding claim 2, the combination of Seo and Chizhik teaches the method of claim 1 where the step of transmitting long term information comprises the steps of:
receiving information over one or more communication channels of the communication system (see Seo, sections [0040,0068]); at least one of measuring or calculating channel parameters from the received information (see sections [0040,0068]); obtaining long term information from the at least one of measured or calculated channel parameters (see sections [0040,0068]); arranging the obtained long term information

(see section [0069]); and transmitting the arranged long term information (see Seo, sections [0040,0068]).

Regarding claim 3, the combination of Seo and Chizhik teaches the method of claim 1 where the long term information is transmitted over a feed back channel of the communication system (see Seo, section [0024]. The uplink channel of Seo reads on the feed back channel of the present invention).

Regarding claim 4, the combination of Seo and Chizhik teaches the method of claim 1 further comprising the step of transmitting short term information obtained from the measured and/or calculated received information (see Seo, section [0090]).

Regarding claim 5, the combination of Seo and Chizhik teaches the method of claim 1 where the long term information is transmitted by a base station of a wireless communication system (see Seo, section [0037]).

Regarding claim 6, the combination of Seo and Chizhik teaches the method of claim 1 where the long term information is transmitted by a mobile that is part of a wireless communication system (see Seo, sections [0024,0040,0068]).

1. Claims 7,9-13,15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al. (US 2003/0123396) in view of Walton et al. (US 2006/0039312).

Regarding claim 7, Seo, as mentioned above, teaches the limitations of claim 1 but does not disclose that the communication system contains at least one MIMO antenna system. Walton, in an analogous art, teaches a communication facility equipped with MIMO system (see fig. 8A). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the MIMO antenna system of Walton to Seo in order to for the combined system to channel estimation and to obtain time and frequency synchronizations.

Regarding claim 9, the combination of Seo and Walton teaches a method of transmitting information in a communication system having at least one multiple antenna system, the method comprising: transmitting over N defined time periods long term information arranged in a particular format and obtained from at least a portion of at least one of measured or calculated received information, where N is an integer equal to 1 or greater (see Seo, fig. 4; sections [0040,0069-0071,0090]); and transmitting short term information where the long term information is used to inform receiver which of a finite set of codes to use to decode the transmitted short term information. (see Walton, fig. 2; section [0258-0275]).

Regarding claim 10, the combination of Seo and Walton teaches the method of claim 1 where the long term information comprises at least a portion of a channel parameter value (see Seo, section [0068]).

Regarding claim 11, the combination of Seo and Walton teaches the method of claim 10 where the long term information is a 2-bit code representing either a beam formed signal having a particular data rate or a MIMO signal having a particular data rate and such long term information is transmitted over a feed back channel of an EVDV communication system (see Walton, section [0266]).

Regarding claim 12, the combination of Seo and Walton teaches the method of claim 10 where the long term portion is a 3 bit code representing an SNR threshold value (see Walton, section [0266]).

Regarding claim 13, the combination of Seo and Walton teaches the method of claim 10 where the long term portion comprises 3 bits representing C/I decade values that are within a certain range (see Seo, sections [0037,0088]).

Regarding claim 15, the claim includes the limitations as that of claim 9,and therefore is interpreted and rejected for the same reason set forth in the rejection of claim 9.

Regarding claim 16, the combination of Seo and Walton teaches the method of claim 15 further comprising the step of modifying information to be transmitted based on the received long term and related short term information (see Seo, section [0037]).

Regarding claim 17, the combination of Seo and Walton teaches the method of claim 15 where a mobile receives the long term information and related short term information (see Seo, section [0037]).

Conclusion

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH D. DAO whose telephone number is 571-272-7851. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW ANDERSON can be reached on 571-272-4177. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Minh Dao MD
AU 2618
September 25, 2006

Matthew Anderson
Supervisor AU2618